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NOV 12 1997

DOE-0128-98

Ms. Ruth Baker
ERM
855 Springdale Drive
Exton, PA 19341

Dear Ms. Baker:

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT SOUTH PLUME EXTRACTION SYETEM - IMPACTS TO THE PADDYS RUN ROAD SITE GROUNDWATER PLUME

The purpose of this letter is to address your inquiry regarding impacts to the Paddys Run Road Site (PRRS) groundwater plume from operation of the Department of Energy's (DOE) South Plume Extraction System. The DOE has been submitting semiannual reports to both the Ohio Environmental Protection Agency (OEPA) and U.S. Environmental Protection Agency (U.S. EPA) regarding the performance of the extraction system. A critical component of this performance report is to document that impacts to the PRRS plume are kept to a minimum. The reports are entitled the, "Design Monitoring Program Plan (DMEPP) Reports." In the future, the same information contained in the DMEPP reports will be consolidated into the Fernald Environmental Management Project (FEMP), "Integrated Environmental Monitoring Program Report," which will be issued annually in addition to quarterly, summary reports.

The enclosed figures labeled 4-8 and 4-9 are from the DMEPP report covering the January through July 1997 monitoring period. Figure 4-8 illustrates the capture zone and flow vectors based on water levels measured in 33 monitoring wells. Figure 4-9 illustrates the particle tracks and capture zone modeled at the systems maximum extraction rate of 1400 gpm using the SWIFT III three-dimensional finite difference contaminant transport model. Pumping rates in the extraction wells are carefully controlled so as to maintain capture of the 20 ppb uranium plume with minimal impact to the PPRS plume. The PPRS constituents of concern are also monitored in a number of the DMEPP wells as an additional means of assessing impacts on the PRRS plume. Table 2-2 lists the 57 monitoring wells included in the DMEPP program and the analytes sampled from each well. Figure 1-1 illustrates all wells monitored as part of the DMEPP.

The DOE estimates that restoration of the contaminated groundwater associated with the FEMP will require a ten-year aggressive extraction/injection program. The groundwater restoration is described in the, "Baseline Remedial Strategy Report Remedial Design for

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Aquifer Restoration." This report has also been submitted to and approved by both the OEPA and U.S. EPA. Figure 4-3 is taken from the "Baseline Strategy Report" and illustrates the location of the extraction and injection wells planned to be utilized during the remediation. Figures 4-12 and 4-13 illustrate the capture zone anticipated as a result of the restoration.

Both the "DMEPP" and "Baseline Remedial Strategy Report" acknowledges the need to keep impacts to the Paddys Run Road Site plume at a minimum throughout the restoration as an important constraint. Based on the data presented in the DMEPP reports, the DOE has operated successfully within this constraint.

If you require additional information, please contact Kathleen Nickel at (513)648-3166.

Sincerely,

Johnny Reising

FEMP:Nickel

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure: As Stated

cc w/enc:

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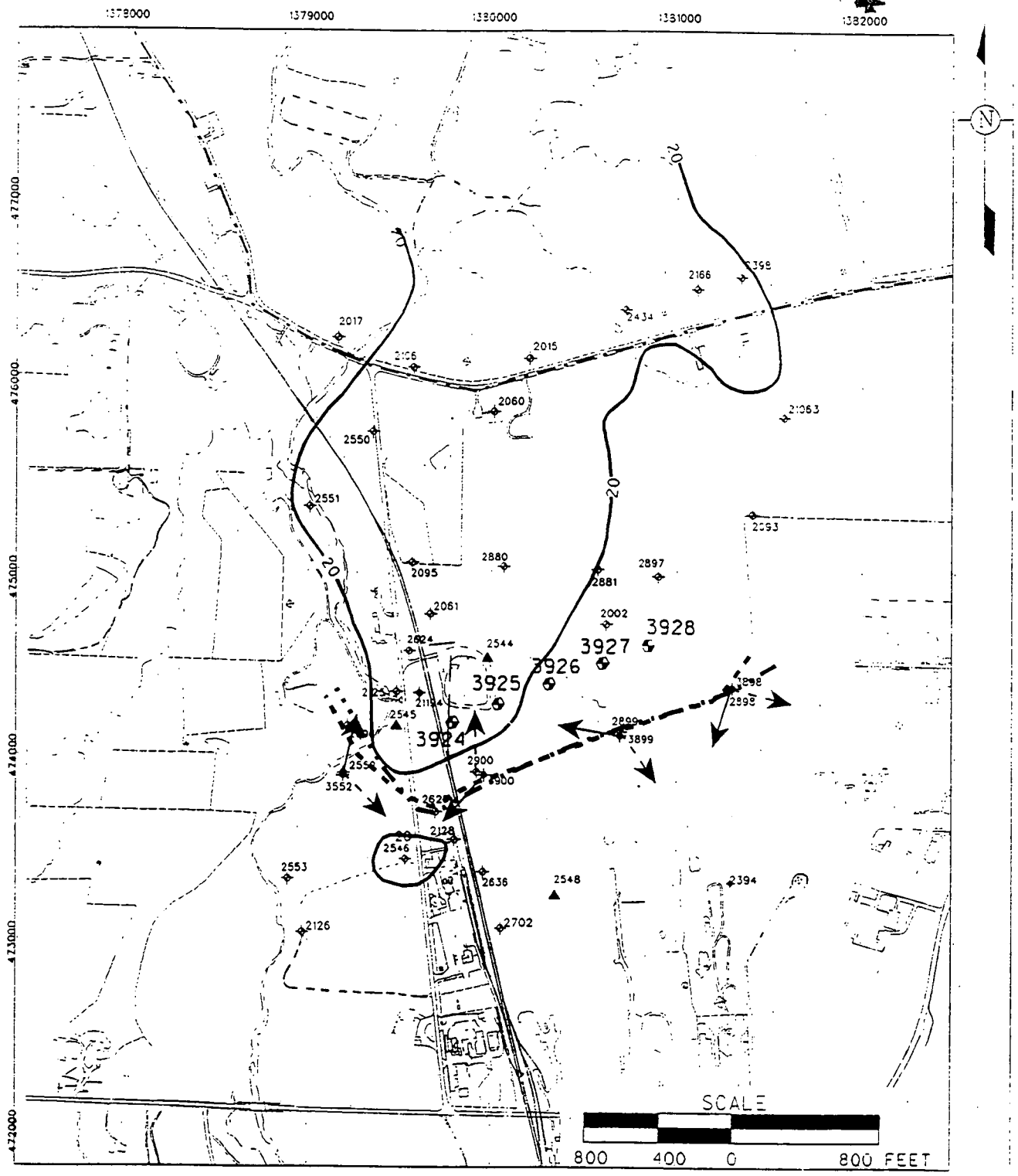
A. Tanner, DOE-FEMP

bcc w/enc:

R. J. Janke, DOE-FEMP
J. Kappa, DOE-FEMP



LEGEND:

- FEMP BOUNDARY
- CAPTURE ZONE BASED ON FIRST QUARTER GROUNDWATER ELEVATIONS
- CAPTURE ZONE BASED ON SECOND QUARTER GROUNDWATER ELEVATIONS
- GROUNDWATER FLOW FOR TYPE 3 WELL
- GROUNDWATER FLOW FOR TYPE 2 WELL
- SECOND QUARTER 1997 TOTAL URANIUM PLUME

FIGURE 4-8. HYDRAULIC CAPTURE ZONES AND GROUNDWATER FLOW VECTORS

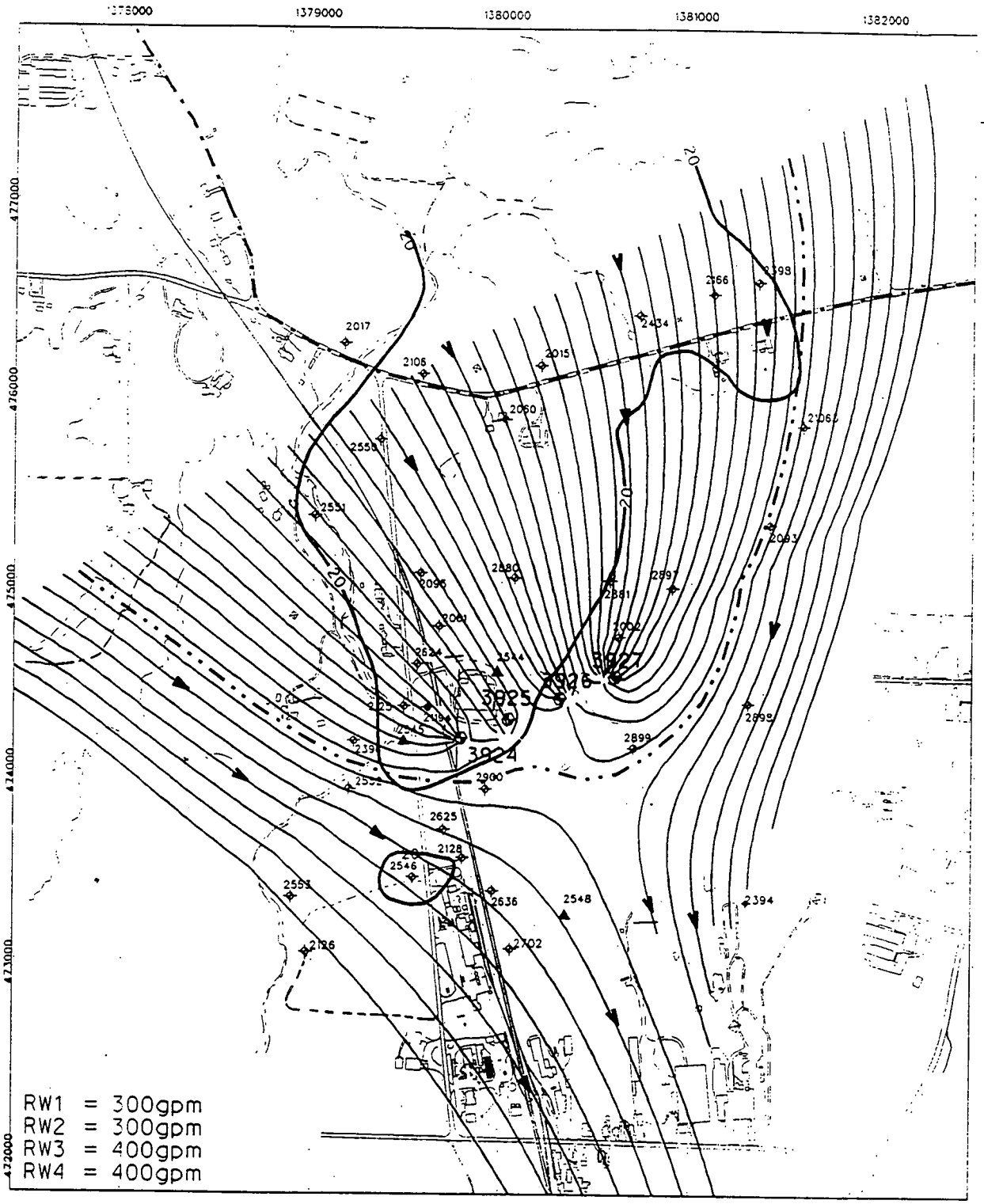


FIGURE 4-9. MODELED 1400 GPM PUMPING CONFIGURATION, PARTICLE TRACKS AND CAPTURE ZONE

TABLE 2-2

DMEPP MONITORING WELLS AND ANALYTICAL PARAMETERS FOR THE GROUNDWATER SAMPLING PROGRAM

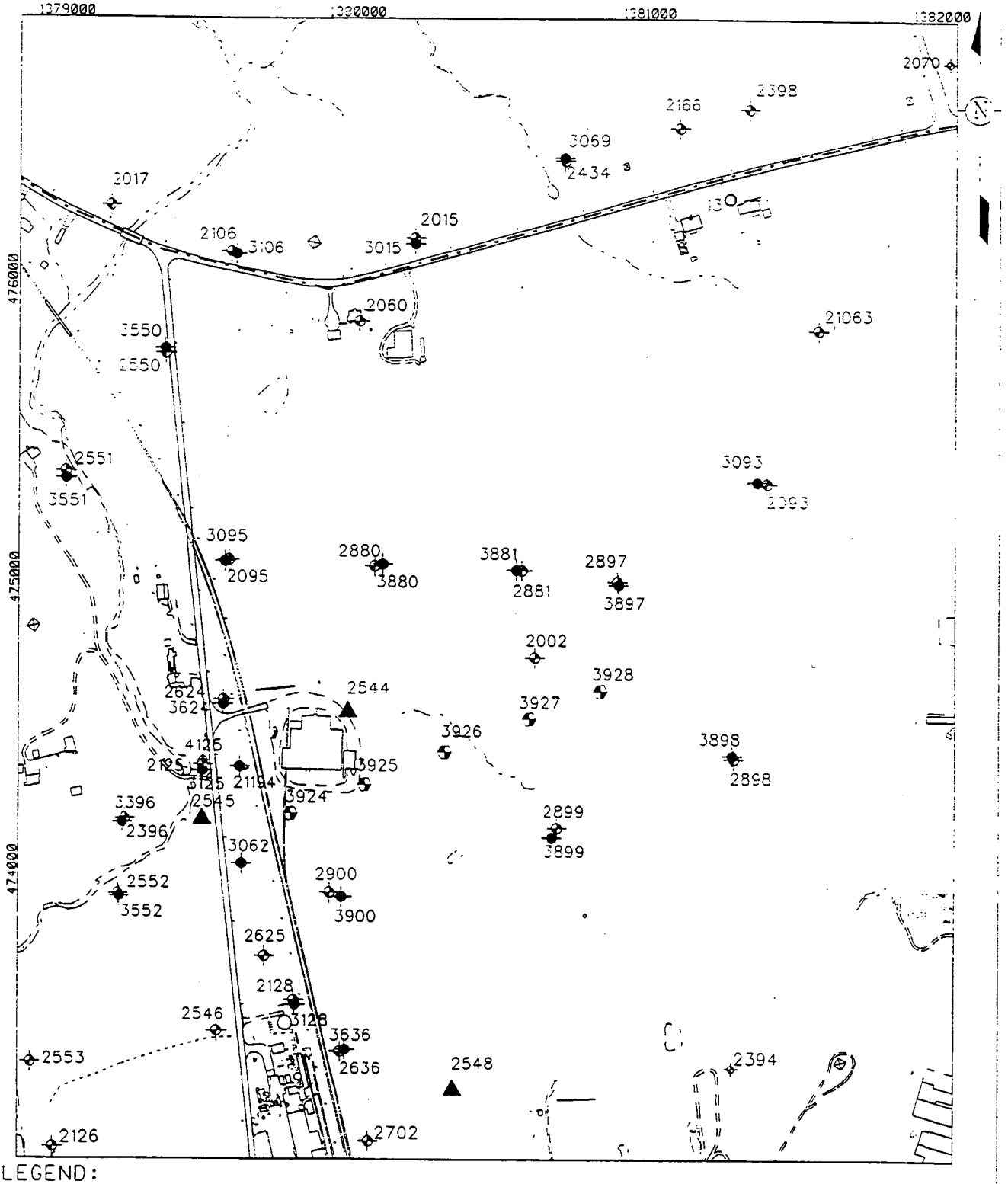
33 Original Wells	Analytical Parameters[a]	24 Supplemental Wells/Date Added[b]	Analytical Parameters[a]
2002	A,B	2015 / 2/94 (5/95)[c]	A,B
2093	A,B	2017 / 2/94 (5/95)[c]	A,B
2095	A,B	2060 / 2/95 (2/95)[c]	A,B
2125	A,B	2106 / 2/94[c]	A,B
2128	A,B,C,D,E	21063 / 5/94 (5/95)	A,B
2544	A,B	2166 / 5/95 (5/95)[c]	A,B
2545	A,B	2396 / 5/95 (5/95)	A,B
2548	A,B,C,D,E	2398 / 1/94[c]	A,B
2624	A,B	2434 / 1/94[c]	A,B
2625	A,B,C,D,E	2546 / (7/96)	A,B
2636	A,B,C,D,E	2550 / 2/94 (5/95)	A,B
2880	A,B	2551 / 2/94 (5/95)	A,B
2881	A,B	2552 / 2/94 (5/95)	A,B
2897	A,B	2553 / 2/94 (5/95)	A,B
2898	A,B,C,D	3015 / 2/94 (5/95)[c]	A,B
2899	A,B,C,D	3062 / (6/95)[d]	A,B
2900	A,B,C,D,E	3069 / 1/96[c]	A,B
3093	A,B	3106 / 2/94[c]	A,B
3095	A,B	3396 / (6/95)	A,B
3125	A,B	3550 / 2/94 (5/95)	A,B
3128	A,B,C,D	3551 / 2/94 (5/95)	A,B
3624	A,B	3552 / 2/94 (5/95)	A,B
3636	A,B,C,D	21194 / 2/95 (2/95)	A,B
3880	A,B	4125 / (6/95)	A,B
3881	A,B		
3897	A,B		
3898	A,B,C,D		
3899	A,B,C,D		
3900	A,B,C,D		
3924	A,B,E		
3925	A,B,E		
3926	A,B		
3927	A,B		

[a]A Dissolved oxygen, pH, specific conductance, temperature (analyzed in the field)
B Total uranium (analyzed at the on-site laboratory)
C Arsenic, phosphorus (total), potassium, sodium (Paddys Run Road Site [PRRS] inorganics)
D Benzene, cumene (isopropyl benzene), ethyl benzene, toluene, xylene (PRRS organics)
E Arsenic (collected on a weekly basis; see results in Appendix A for exact sample collection dates)

[b]Date added identifies when analytical results were first used in support of findings for the DMEPP. The date in parentheses is when the monitoring well was formally added to the DMEPP sampling program.

[c]Monitoring well is sampled under a separate program but provides the necessary analytical results on a sampling schedule compatible with the DMEPP.

[d]Well not available for sampling due to electrical problems with the pump.



LEGEND:

- FEMP BOUNDARY
- 2545 ▲ TYPE 2 PADDYS RUN ROAD SITE PIEZOMETER
- 3900 ◆ TYPE 3 MONITORING WELL
- 2900 ⊕ TYPE 2 MONITORING WELL
- 3926 RECOVERY WELL
- 13 ○ HOMEOWNER WELL

SCALE

500 250 0 500 FEET

FIGURE 1-1. MONITORING WELLS THAT PROVIDE DATA FOR THE DMEPP

STATE PLANAR COORDINATE SYSTEM 1927

27-AUG-1997

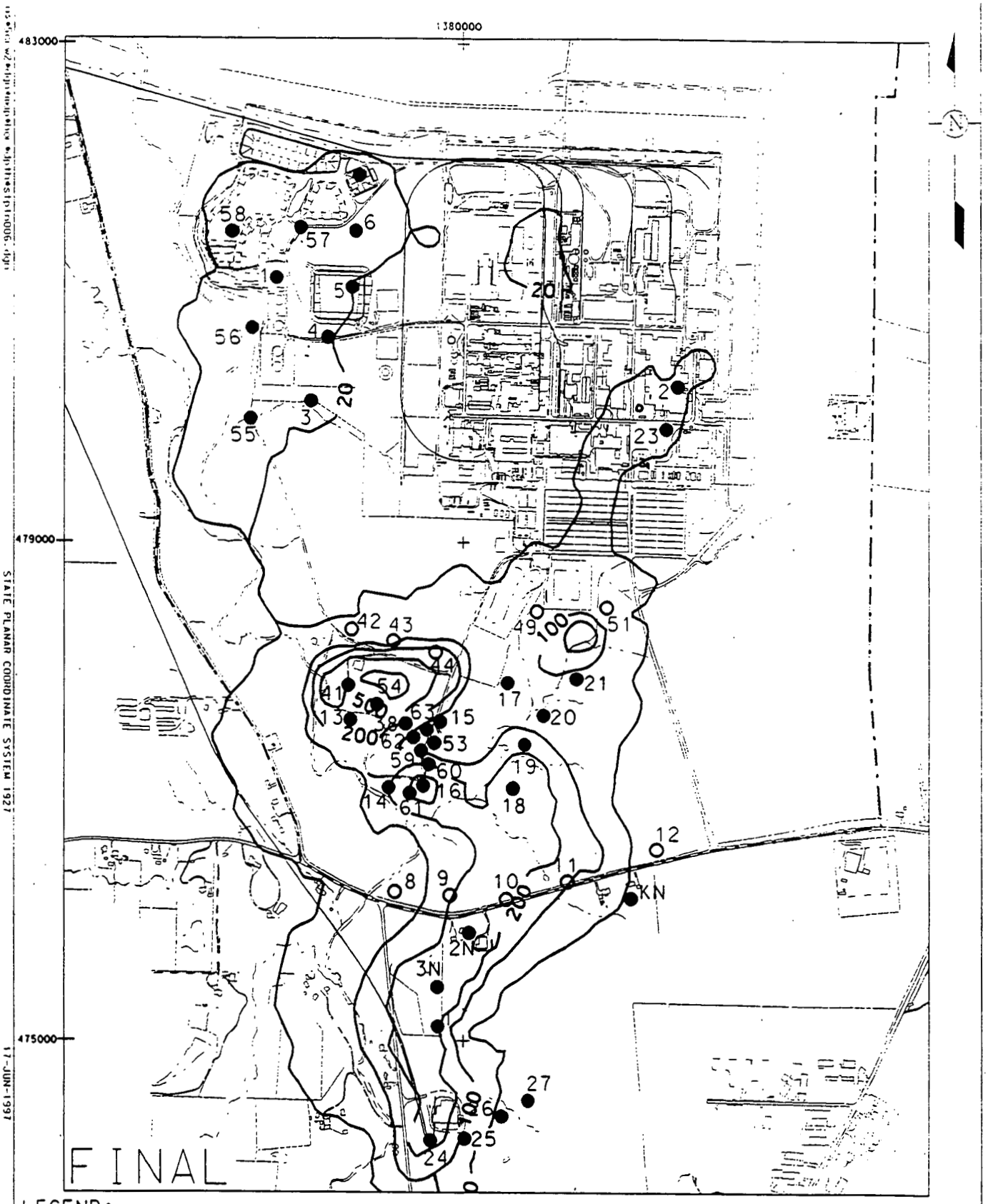
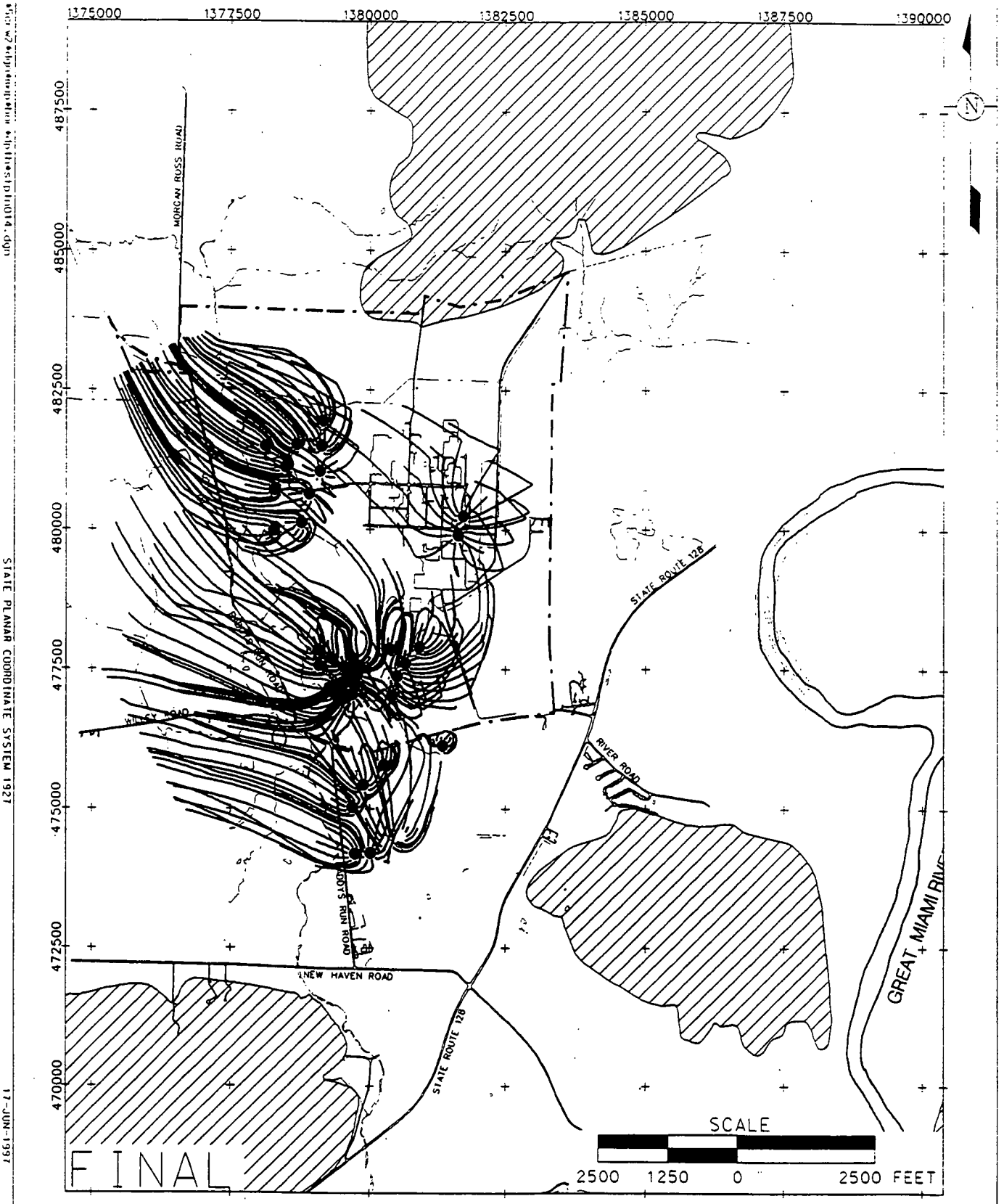


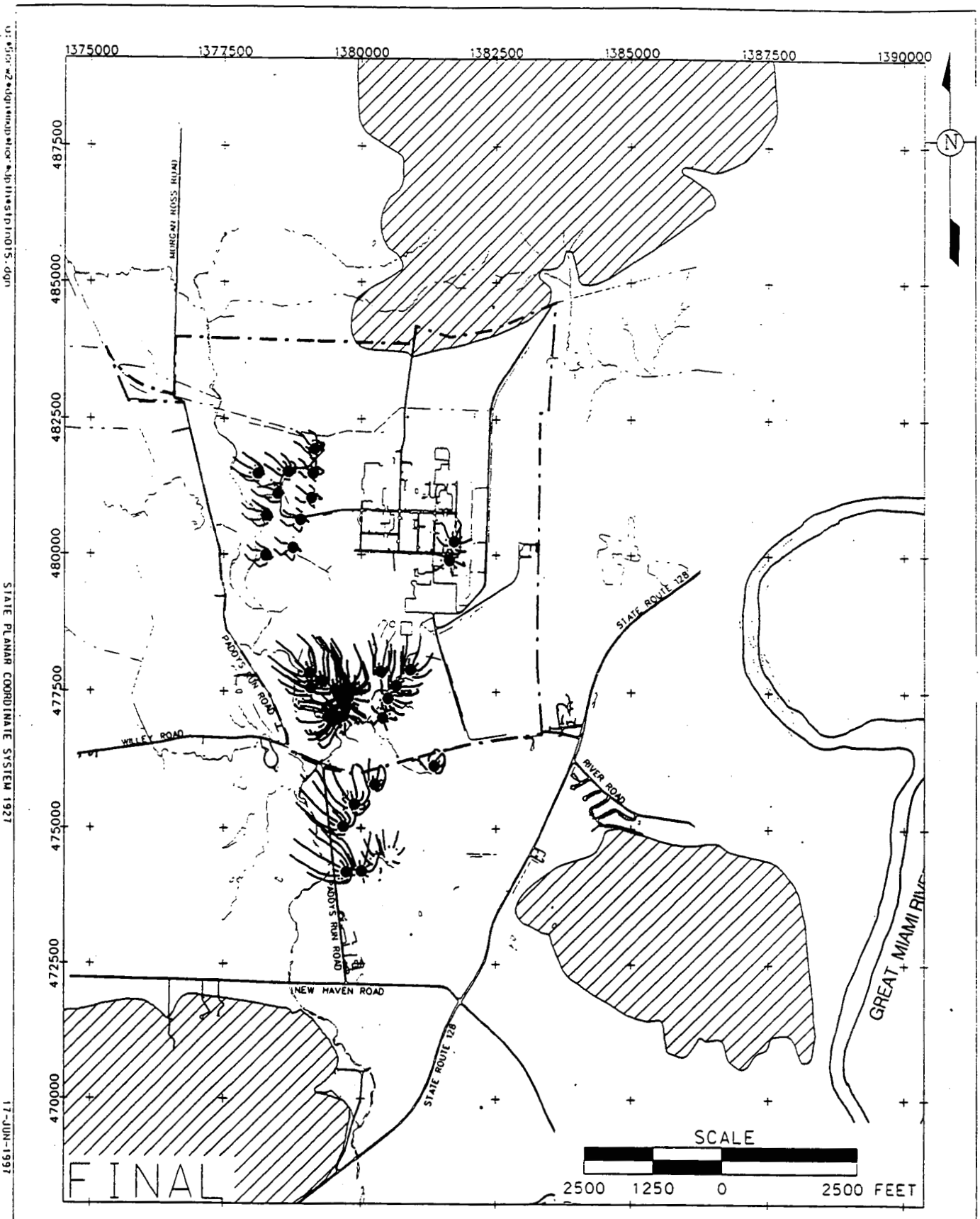
FIGURE 4-3. WELL LOCATIONS FOR 10-YEAR SCENARIO



LEGEND:

- FEMP BOUNDARY
- EXTRACTION WELL
- 10-YEAR PARTICLE TRACKS (NO RETARDATION)

FIGURE 4-12. CAPTURE ZONE, 10-YEAR SCENARIO, NO RETARDATION



STATE PLANAR COORDINATE SYSTEM 1927

17-JUN-1997

FIGURE 4-13. CAPTURE ZONE, 10-YEAR SCENARIO, RETARDATION=12

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